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BEFORE THE
POSTAL REGULATORY COMMISSION
WASHINGTON, D.C. 20268–0001

PERIODIC REPORTING (PROPOSAL TWO)	Docket No. RM2022-8

RESPONSES OF THE UNITED STATES POSTAL SERVICE
TO QUESTIONS 1-4 OF CHAIRMAN'S INFORMATION REQUEST NO. 2
(August 5, 2022)

The United States Postal Service hereby provides its responses to the above listed questions of Chairman's Information Request No. 2, issued July 29, 2022. The questions are stated verbatim and followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorney:

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RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

1. In the instant docket, the Postal Service states that a post office's Work Service Credits (WSCs) "depend upon a measure of its revenue [units], not its volume. To measure the relationship between WSCs and volume would thus require studying and measuring the relationship between post offices' revenue and their volumes. There currently are no data on post offices' volumes." Response to CHIR No. 1, question a.-b., n.2. The Bradley Study further explains that "[a] revenue unit is the average amount of revenue per fiscal year from postage prices and fees for 1,000 pieces of originating mail and Special Service transactions." Bradley Study at 33, n.22. Previously, in Docket No. R84-1, the Postal Service provided a figure that tied "Mail Volume" to "Revenue Units."[1]

a. Please confirm that post offices' mail volumes provide input in calculating post offices' revenue per fiscal year.

b. If question 1.a. is confirmed, please explain why post offices' volume data are not collected when estimating post offices' revenues per fiscal year.

c. If question 1.a. is not confirmed, please explain how revenues per fiscal year are calculated.

RESPONSE:

a. Not confirmed.

b. Not applicable.

c. Revenues for each post office are directly recorded through the Postal Service's accounting system. All post offices are assigned a 6-digit finance number. The first two digits signify the state; the last four, the post office number within the state. These numbers are used to compile revenues and expenses for all post offices. In addition, volume is not required to measure the number of revenue units used to calculate a post office's Work Service Credits.

[1] *See* Docket No. R84-1, Direct Testimony of Nai-Chi Wang on Behalf of the United States Postal Service, November 10, 1983, at 10, Figure A.

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

A revenue unit is the average revenue for 1,000 pieces of revenue-generating mail and special service transactions. It is a single national number that is applicable for all post offices. For example, suppose that the overall average revenue per piece was $0.59. Then the revenue unit would be defined as $590 which is equal to 1,000 * $0.59. If a Post Office had a gross annual revenue of $118,000, then it would have ($118,000/$590) 200 revenue units. Those revenue units would then translate into Work Service Credits using the weights provided in the response to question 1.c. in Chairman's Information Request No. 1 on July 22, 2022.

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

2. In Docket No. RM2020-2, Bradley Study, the Postal Service stated that "[p]ost offices with WSC levels that are outside the cutoff values can be fairly designated as misclassified. Their WSC level is actually associated with a different EAS grade and the misalignment could be created by a data error." Docket No. RM2020-2, Bradley Study at 28. In the current docket, the Bradley Study further states that "[t]o identify out-of-bounds offices in [Proposal Ten], the Postal Service established boundaries that lie[d] outside the Zone of Tolerance limits for each EAS grade [, and the Proposal Ten] boundaries are again applied here [in Proposal Two]." Bradley Study at 18. Please describe in detail the Postal Service's methodology for establishing the boundaries for identifying out-of-bounds postal offices.

RESPONSE:

In the current docket, the Postal Service follows the approach to identifying out-of-bounds post offices that was used by the Commission in Docket No. RM2020-2:[2]

> The 2022 logit models are estimated with the same algorithm that was used by the Postal Service, and the Commission, in Docket No. RM2020-2. An important step in that algorithm is identifying and eliminating offices whose WSCs are strongly inconsistent with their EAS grade.

The need to establish boundaries arises because offices whose WSCs are strongly inconsistent with their EAS grade can have an undue influence on the estimated logit models and cause them to have a relatively poor model fit.[3] In Docket No. RM2020-2, initial estimation of the logit models using the data from all post offices

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[2] *See*, Calculating Variabilities for Postmaster Costs, Docket No. RM2022-8, July 7, 2022 at 18. This approach was first proposed by the Postal Service in that case.

[3] For a detailed discussion of this issue, please *see*, Investigating the Variability of Postmaster Costs, Docket No. RM2020-2, Nov. 29, 2019 at 26-30.

led to rejection of the hypothesis of a good model fit for all but one of the logit models.[4] Research showed that the reason for the poor model fit was the existence of a small number of post offices that had WSCs that were not only outside their respective Zones of Tolerance (ZOT), but also were greatly different from the level of WSCs that an office in that grade should have:[5]

> An investigation into the source of these rejections demonstrated that the fit problem arises from a small number of observations that have WSCs very different from their grade and well beyond their respective Zones of Tolerance.
>
> For example, the upper bound for the EAS-20 grade is 13,000 WSCs and the upper Zone of Tolerance for the EAS-20 grade (between grade EAS-20 and grade EAS- 21) is between 13,001 WSCs and 14,299 WSCs. But there is an EAS-20 observation with 19,726 recorded WSCs. The model would classify this office as a grade EAS-21, even though it is an EAS-20 grade in the data. Similarly, the lower bound for the EAS-21 grade is 13,001 WSCs and the lower Zone of Tolerance is between 11,701 WSCs and 13,000 WSCs. Yet there are two EAS-21 post offices with WSC values well below the lower Zone of Tolerance at WSC values of 683 and 4,609. The model would appropriately classify these two offices as EAS-20 grades despite being EAS-21 grades in the data. When these actual observations differ from their expectations, such circumstances cause the H-L statistic to indicate that the model has a poor fit.

Because offices with WSCs outside their respective Zones to Tolerance are not necessarily misclassified, it is inappropriate to use the ZOT bounds as the cutoffs.

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[4] *Id.* at 26, 34, and 36.

[5] *Id.* at 27.

Moreover, post offices that have WSCs outside, but close to, their ZOT are unlikely to cause problems for the logit estimation. Finally, it is important to be careful to eliminate just those observations that are creating an undue influence and not eliminate valid, but unusual observations. Establishing boundaries that lie outside the Zones of Tolerance is thus appropriate for finding the post offices that are causing rejection of good model fits:[6]

> Potential influential observations can be identified by investigating the existence of post offices that are outside the Zone of Tolerance limits for their grade. To do this, a cutoff value is established for each Zone of Tolerance that is well beyond the extreme value for that Zone of Tolerance. For example, the extreme value for the EAS-20 upper Zone of Tolerance is 14,299 WSCs and the cutoff value is 18,000 WSCs.

The process followed to identify out-of-bounds post offices for each estimated logit model is similar to the process followed in the approved method for identifying unduly influential observations in Docket No. RM2014-6 and in Docket No. RM2021-1, albeit in application to a very different econometric model. The previously approved process involved using both a statistical measure (Cook's D) and examination of the individual observations, and the current process uses both a statistical measure (Hosmer-Lemeshow test for model fit) and examination of the individual post offices' observations.

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[6] *Id*.

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

Identification and examination of the data for all post offices whose WSCs were inconsistent with their EAS grades led to recognition that not all of those post offices were equally far from the ZOT borders. Moreover, those offices that are the most far from the ZOT borders are most likely to cause estimation problems for the logit model. For example, the lower bound for the Zone of Tolerance for post offices in grade EAS-21 is 11,701 WSCs. There are three EAS-21 post offices in the 2019 dataset with WSCs below that value. One of the offices has WSCs quite close to that value (just 4.4 percent below the border) while the other two are quite far away (60 percent and 94 percent below the border).

EAS-21 Post Offices with WSCs Below the Lower ZOT

WSCs	Difference from Border	% Difference From Border
683.4	-11,017.6	-94.2%
4,608.9	-7,092.1	-60.6%
11,190.8	-510.2	-4.4%

The post office with just 683.4 WSCS will likely cause trouble for the logit model because it has a level of WSCs that is greatly different from those associated with EAS-21 offices. That is not the case for the office with 11,190.8 WSCs, and inclusion of the latter office in the estimation dataset is not likely to cause an estimation problem. To the extent that the post office with 11,190.8 WSCs does not cause estimation difficulties for the logit model, it should be included in the estimation database. Just because a post office's WSCs fall outside the Zone of Tolerance for its current grade, it does not

automatically shift to a different pay grade. In this case, a boundary of 10,000 WSCs eliminated the troublesome post offices, while retaining the appropriate one. This decision was checked empirically by calculating the Hosmer-Lemeshow statistic after the extremely atypical post offices were removed.

The success of this approach applied by the Postal Service and the Commission in Docket No. RM2020-2 to identifying out-of-bounds post offices is highlighted by two facts. First, it led to the elimination of a very small number of observations (it preserved 99.8 percent of the observations) and, second, it dramatically improved the model fit:[7]

> The impact of this small number of highly unusual observations can be determined by re-estimating the logit models on the remaining 99.8 percent of the data. Doing so has a remarkable impact on the goodness of fit measures as it shifts all of the H-L statistics from rejecting to not rejecting the null hypothesis of a good model fit.

The 2022 dataset used in this docket is very similar to the 2019 dataset used in Docket No. RM2020-2.[8] It also contains a small number of observations that could have the potential to unduly influence the estimated logit models:[9]

> [T]he lower bound on EAS-21 is 13,001 WSCs. The lower limit on the Zone of Tolerance is 11,701 WSCs. Thus, any office in the EAS-21 grade should have at least 11,701 WSCs. But, in the 2022 dataset, there is an EAS-21 office with a listed value of just 493 WSCs. This is clearly an out-of-bounds value for WSCs for an EAS-21 office, and

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[7] *Id*. at 28

[8] *See*, Calculating Variabilities for Postmaster Costs, Docket No. RM2022-8, July 7, 2022 at 14-16.

[9] *Id.* at 18.

including it in the estimation dataset could distort the estimated parameters.

It is thus appropriate to again apply the method used in Docket No. RM2020-2 by the Postal Service and the Commission to identify and eliminate these troublesome observations.

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

3. Please refer to the Bradley Study that provides a table identifying Out-of-Bounds post offices. *See* Bradley Study at 19, Table 4. Please also refer to Library Reference USPS-RM2022-8/1, filed July 7, 2022, folder "Directory 2 - Constructing the 2022 Analysis Data Set," Excel file "Feb 22 WSC Data.xlsx (February 2022 WSC Spreadsheet)," cell B7797 (EAS-22 Misaligned WSC Post Office).

a. Please confirm that in the Proposal Two variability analysis, the EAS-22 Misaligned WSC Post Office has a grade of EAS-22 and a WSC level of 22,848. If not confirmed, please provide the WSC level and EAS grade for the identified post office.

b. Please confirm that the lower Zone of Tolerance limit for an EAS-22 grade post office is 23,401 WSCs and the proposed cutoff assigned by the Postal Service is 20,000. If not confirmed, please provide the lower Zone of Tolerance limit and proposed cutoff.

c. Please confirm that the EAS-22 Misaligned WSC Post Office is not identified as an out-of-bounds post office in Table 4 in the "22 Lower" row.

   i. If confirmed, please explain why this post office cannot be designated as misclassified.

   ii. If not confirmed, please explain the presence of a post office with a grade of EAS-22 and a WSC level of 18,607 in the February 2022 WSC Spreadsheet.

d. Please identify all instances of post offices that fall in between the Zone of Tolerance (ZOT) limits and the cutoffs proposed by the Postal Service.

e. For these instances identified in question 3.d., please explain why the Postal Service did not designate any offices that fall below the lower limit on the ZOT or above the upper limit on the ZOT as misclassified.

f. For these instances identified in question 3.d., please explain how the inclusion of such observations in the logit regressions affects the results and conclusions in the Bradley Study.

RESPONSE:

a. Confirmed that cell A7797 contains a value of EAS-22 and that cell B7797 contains the value of 22,848 in Feb 22 WSC Data.xlsx. It is not confirmed that is a Misaligned WSC Post Office. When a post office's WSCs fall outside the Zone of

Tolerance for its current grade, it does not automatically shift to a different pay grade. Instead, a management review of the post office is initiated and must be completed before a change in pay grade is made. Misalignment in this context refers to a condition where the post office WSCs are sufficiently different from those from its EAS grade so as to cause problems when estimating the relevant logit model.

b. Confirmed.

c. Confirmed that a post office with WSC equal to 22,848 and an EAS-22 level is not the single out-of-bounds post office (out of 2,031 post offices) identified in the EAS-21 and EAS-22 model listed in Table 4. It is not confirmed that is a Misaligned WSC Post Office. It is not designated as misaligned because when a post office's WSCs fall outside the Zone of Tolerance for its current grade, it does not automatically shift to a different pay grade. Instead, a management review of the post office is initiated and must be completed before a change in pay grade is made. Also, as explained in the response to question 2 above, misaligned post offices typically have WSCs that are well beyond the relevant Zone of Tolerance cutoff.

d. Of the 13,592 post offices in the 2022 dataset there are 29 post offices that lie between the relevant Zone of Tolerance limits and the cutoffs proposed by the Postal Service. The requested breakouts by logit model datasets are provided below:[10]

[10] The individual post offices are identified in the SAS program entitled Identify Offices Requested in CHIR 2. That SAS program and its log and listing are provided in the zip file that is attached to this response set electronically.

Identifying The Requested Offices

Model	Type of ZOT	# Identified
18 to 18B	18 Upper	2
	18B Lower	11
18B to 20	18B Upper	6
	20 Lower	6
20 to 21	20 Upper	3
	21 Lower	0
21 to 22	21 Upper	0
	22 Lower	1
22 to 24	22 Upper	0
	24 Lower	0

e. These offices are not designated as misclassified because when an office's WSCs fall outside the Zone of Tolerance for its current grade, it does not automatically shift to a different pay grade. Instead, a management review of the post office is initiated and must be completed before a change in pay grade is made. In sum, it could remain in its current pay grade.

In addition, the analysis is focused on finding those offices that are so misaligned that they distort the logit models and cause them to fit poorly. Eliminating just the post offices that lie outside the out-of-bounds limits achieved that goal in the current docket, as in all cases, after their removal, the calculated Hosmer-Lemeshow Chi-squared test statistics indicate that the hypothesis of a good fitting model cannot be rejected.[11] Thus, there is no need to eliminate additional observations. Finally, to the extent that a post

[11] *See*, Calculating Variabilities for Postmaster Costs, Docket No. RM2022-8, July 7, 2022 at 20.

office's WSCs are outside of, but not far from, the Zone of Tolerance it is unlikely to have an undue influence on the logit regression.

f. Inclusion of the small number (29) of post offices that lie between the Zone of Tolerance and the boundary limit is unlikely to have a material impact on the logit models and estimated variabilities presented in Proposal Two. The models already fit well with them included and produce results very similar to those produced in Docket No. RM2020-2. In addition, many of the 29 offices have WSC values which are close to the ZOT limit and would be unlikely to have an undue influence on the estimated logit models.

As the following table shows, the empirical results confirm this intuition as the estimated variabilities do not change as a result of excluding the offices that fall below the lower limit on the ZOT or above the upper limit on the ZOT.[12]

EAS Grades	Including PRC Designated Offices	Excluding PRC Designated Offices	Difference
18 & 18B	0.0547	0.0549	0.0002
18B & 20	0.0219	0.0219	0.0000
20 & 21	0.0057	0.0058	0.0001
21 & 22	0.0224	0.0224	0.0000

[12] The full regression results are provided in the attached zip file. Note that there are no post offices that fall below the lower limit on the ZOT or above the upper limit on the ZOT in the EAS-22/EAS-24 regression dataset or in the EAS-24/EAS-26 dataset.

RESPONSE OF THE UNITED STATES POSTAL SERVICE TO CHAIRMAN'S INFORMATION REQUEST NO. 2

4. In Proposal Ten, the Postal Service stated that "when the Postmaster variabilities are calculated, the EAS grades indicated by the estimated logit model are used in the calculation. Thus, the small number of offices that may appear misclassified in the raw WSC data are appropriately classified for the variability calculation." Docket No. RM2020-2, Response to CHIR No. 1, question 2.d.

a. Please confirm that in Proposal Two, the Postal Service continues to exclude the small number of offices that appear misclassified (out-of-bounds) from the logit regressions, but it assigns them to an EAS grade based on the results of the regressions and includes them as such in the variability calculation. If not confirmed, please explain.

b. If question 4.a. is confirmed, please explain why it is appropriate to use the WSC data from out-of-bounds post offices in the variability calculations. If not confirmed, please explain the role, if any, of the data from out-of-bounds post offices in the estimation of Postmaster variabilities in Proposal Two.

c. If question 4.a. is confirmed, please confirm that Proposal Two variabilities could be calculated without using the data from the out-of-bounds post offices.

d. If question 4.c. is confirmed, please calculate variabilities that exclude data from out-of-bounds post offices. If not confirmed, please explain why variabilities could not be calculated without using the data from the out-of-bounds post offices.

RESPONSE:

a. Not confirmed. If a post office is not included in the estimation of the logit model, then it is not used in the calculation of the associated variability. For example, review of the SAS listing entitled, 2022 WSCs 2019 Salary Calculate Variability 18 and 18B.log, provided in USPS-RM2022-8-1, Public Material Supporting Proposal Two, Directory 4 - Estimate 2022 Models and Variabilities, shows there are 8,610 observations in the original EAS-18 and EAS-18B data set. After elimination of out-of-bounds post offices, the data set is reduced to 8,597 post offices. The log shows that 8,597 post offices are

used to estimate the logit model and that 8,597 post offices are used to calculate the variability.

Please note that the offices being discussed in the quotation are not the offices eliminated by the established method for eliminating out-of-bounds offices, but rather those post offices which fall between the Zone of Tolerance limits and the established out-of-bounds limits.

b. The out-of-bounds post offices are not used in the calculation of the variabilities.

c. The submitted variabilities are calculated without using the data from the out-of-bounds post offices.

d. The submitted variabilities are calculated without using the data from the out-of-bounds post offices.